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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,684	03/20/2001	Ron Dembo	13408.00007	1100
1059	7590	11/18/2004	EXAMINER	
BERESKIN AND PARR SCOTIA PLAZA 40 KING STREET WEST-SUITE 4000 BOX 401 TORONTO, ON M5H 3Y2 CANADA			DASS, HARISH T	
			ART UNIT	PAPER NUMBER
			3628	
DATE MAILED: 11/18/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/811,684

**Applicant(s)**

DEMBO ET AL. 9

**Examiner**

Harish T Dass

**Art Unit**

3628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Oath/Declaration***

1. A new oath or declaration is required because alteration without initialization.

The wording of an oath or declaration cannot be amended. If the wording is not correct or if all of the required affirmations have not been made or if it has not been properly subscribed to, a new oath or declaration is required. The new oath or declaration must properly identify the application of which it is to form a part, preferably by application number and filing date in the body of the oath or declaration. See MPEP §§ 602.01 and 602.02.

### ***Claim Rejections - 35 USC § 101***

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 29 remain rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter, particularly, an abstract idea.

As an initial matter, the United States Constitution under Art. I, §8, cl. 8 gave Congress the power to "[p]romote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries". In carrying out this power, Congress authorized under 35 U.S.C. §101 a grant of a patent to "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition or matter, or any new and useful improvement

thereof." Therefore, a fundamental premise is that a patent is a statutorily created vehicle for Congress to confer an exclusive right to the inventors for "inventions" that promote the progress of "science and the useful arts". The phrase "technological arts" has been created and used by the courts to offer another view of the term "useful arts". See *In re Musgrave*, 167 USPQ (BNA) 280 (CCPA 1970). Hence, the first test of whether an invention is eligible for a patent is to determine if the invention is within the "technological arts".

Further, despite the express language of §101, several judicially created exceptions have been established to exclude certain subject matter as being patentable subject matter covered by §101. These exceptions include "laws of nature", "natural phenomena", and "abstract ideas". See *Diamond v. Diehr*, 450, U.S. 175, 185, 209 USPQ (BNA) 1, 7 (1981). However, courts have found that even if an invention incorporates abstract ideas, such as mathematical algorithms, the invention may nevertheless be statutory subject matter if the invention as a whole produces a "useful, concrete and tangible result." See *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* 149 F.3d 1368, 1973, 47 USPQ2d (BNA) 1596 (Fed. Cir. 1998).

This "two prong" test was evident when the Court of Customs and Patent Appeals (CCPA) decided an appeal from the Board of Patent Appeals and Interferences (BPAI). See *In re Toma*, 197 USPQ (BNA) 852 (CCPA 1978). In *Toma*, the court held that the recited mathematical algorithm did not render the claim as a whole non-statutory using the Freeman-Walter-Abele test as applied to *Gottschalk v. Benson*, 409

U.S. 63, 175 USPQ (BNA) 673 (1972). Additionally, the court decided separately on the issue of the "technological arts". The court developed a "technological arts" analysis:

The "technological" or "useful" arts inquiry must focus on whether the claimed subject matter...is statutory, not on whether the product of the claimed subject matter...is statutory, not on whether the prior art which the claimed subject matter purports to replace...is statutory, and not on whether the claimed subject matter is presently perceived to be an improvement over the prior art, e.g., whether it "enhances" the operation of a machine. In re Toma at 857.

In Toma, the claimed invention was a computer program for translating a source human language (e.g., Russian) into a target human language (e.g., English). The court found that the claimed computer implemented process was within the "technological art" because the claimed invention was an operation being performed by a computer within a computer.

The decision in State Street Bank & Trust Co. v. Signature Financial Group, Inc. never addressed this prong of the test. In State Street Bank & Trust Co., the court found that the "mathematical exception" using the Freeman-Walter-Abele test has little, if any, application to determining the presence of statutory subject matter but rather, statutory subject matter should be based on whether the operation produces a "useful, concrete and tangible result". See State Street Bank & Trust Co. at 1374. Furthermore, the court found that there was no "business method exception" since the court decisions that purported to create such exceptions were based on novelty or lack of enablement issues and not on statutory grounds. Therefore, the court held that "[w]hether the

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patent's claims are too broad to be patentable is not to be judged under §101, but rather under §§102, 103 and 112." See *State Street Bank & Trust Co.* at 1377. Both of these analysis goes towards whether the claimed invention is non-statutory because of the presence of an abstract idea. Indeed, *State Street* abolished the *Freeman-Walter-Abele* test used in *Toma*. However, *State Street* never addressed the second part of the analysis, i.e., the "technological arts" test established in *Toma* because the invention in *State Street* (i.e., a computerized system for determining the year-end income, expense, and capital gain or loss for the portfolio) was already determined to be within the technological arts under the *Toma* test. This dichotomy has been recently acknowledged by the Board of Patent Appeals and Interferences (BPAI) in affirming a §101 rejection finding the claimed invention to be non-statutory. See *Ex parte Bowman*, 61 USPQ2d (BNA) 1669 (BdPatApp&Int 2001).

In the present application, Claim 29 have no connection to the technological arts. None of the steps indicate any connection to a computer or technology, database can be collections of charts, etc. and risk engine can be a calculator or slide-rule for calculation. The computer in claim 29 is merely used for storing data and nothing else is performed by the computer.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-10, 12-29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 1 (line 7), 20 (line 2), 24 (line 8) and 29 (line 4) time-value scenarios can not be find in original specification, and in claims 9 (line 3) and claim 10 (line 2) at least two different selected subsets can not be found in original specification. Amend the claims to reflect what was in original specification.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10, 15-16, 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dembo (US 5,148,365) in view of Moor et al (herein after Moore; US 5,446,885), Tull, Jr. et al (hereinafter Tull, Jr. - US 6062056) and Ohata et al (herein Ohata; US 5,864,857).

Re. Claims 1 15-16, 18-20, 24-29 Dembo discloses - selecting a set of financial instruments (options or securities), each financial instrument (option) in said set having a model defined therefore, each model operating on at least one risk factor to produce a value for said financial instrument (option), - selecting a set of scenarios, each scenario

comprising a risk factor value for each risk factor operated on by said models of said financial instruments (options) at least a first and second time interval and each scenario having a probability value assigned thereto, said probability value representing the likelihood of said scenario occurring and - at least one risk engine (**processing software**) operable to determine an instrument risk value (risk exposure) for each financial instrument in said set of financial instruments, said risk value determined by evaluating, in view of said risk factors values in each said scenario and at each of at least a first and second time interval, a model stored for said instrument [see entire document particularly, Abs; C1 L4-L67; C2 L43 to C3 L12; C4 L50 to C5 L12; C8 L27-L67; Claims],

(15) step of modifying said set of scenarios to change at least one risk factor value and performing steps (iii) through (v) to produce a new risk metric [C1 L4-L67; C2 L43 to C3 L12; C4 L50 to C5 L12; C8 L27-L37],

(16) said at least one risk factor value is changed such that said value does not change with time [C1 L4-L67; C2 L43 to C3 L12; C4 L50 to C5 L12; C8 L27-L67], and

databases which store information for options (options are financial instruments), risk engine (**processing software**), [C1 L4-L67; C2 L43 to C3 L12; C4 L50 to C5 L12; C8 L27-L67; ].

Dembo, explicitly, does not disclose, - *applying* said selected set of scenarios to said set of financial instruments to produce at least one instrument risk value for each financial instrument in said set of financial instruments for each scenario in said set of scenarios for each time interval, and *applying* said selected set of scenarios to said



portfolio to produce an instrument risk value for each financial instrument in said portfolio for each scenario in said set of scenarios for each time interval;

(iv) storing first instrument risk values produced at step (iii) in a database residing on at least one computer, wherein at least a subset of said first instrument risk values comprises mark-to-future values, said database organized as a multi-dimensional structure wherein one axis of said structure represents financial instruments, another axis of said structure represents scenarios and another axis of said structure represents time intervals. wherein the at least one first instrument risk value associated with the respective financial instrument, scenario, and time interval are stored in said structure, and

- for a portfolio of instruments comprising at least a subset of said set of financial instruments, producing a desired risk metric, producing a first measure of said at least one risk metric, wherein said producing step is performed by at least one aggregation engine adapted to retrieve for each financial instrument in said portfolio, stored instrument risk values for each scenario in said set of scenarios for each time interval from said database;

sum said retrieved instrument risk values at each scenario at each time interval to produce aggregated risk values for said portfolio; and compute said desired risk metric using said aggregated risk values for said portfolio.

(18) step of storing said produced risk metrics in said database

(19) the step of determining a credit exposure risk for at least one first party who is counter party for at least one of said financial instruments in said set of financial

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instruments, determining a subset of said set of financial instruments for which said first party is the counter party and determining the credit exposure for said first party by retrieving said stored values and said associated probabilities from said database.

- producing a second measure of said at least one risk metric, wherein said producing step at step (vi) is performed by said at least one aggregation engine further adapted to combine associated probabilities and said additional instrument risk values for said **altered** financial instruments with said stored instrument risk values for **unaltered** financial instruments in said set of financial instruments retrieved from said database to a compute said second measure of said at least one risk metric, and

- for each financial instrument in said set of financial instruments affected by said proposed transaction, altering each said affected financial instrument in accordance with said proposed transaction and applying said selected set of scenarios to each altered financial instrument to produce one or more additional instrument risk values for each altered financial instrument for each scenario in said set of scenarios for each time interval;

(25) wherein said additional instrument risk values for said **altered** (updated) financial instruments are stored in said database.

(26) wherein said proposed transaction comprises **altering** the amount of at least one financial instrument in said set of financial instruments,

(27) wherein said proposed transaction comprises adding a financial instrument to said set of financial instruments.

(28) wherein steps (v) and (vi) are performed for a second proposed transaction and said second measure of said at least one risk metric is produced for each of said proposed transactions.

Regarding "(iv) storing first instrument risk values produced at step (iii) in a database residing on at least one computer, wherein at least a subset of said first instrument risk values comprises mark-to-future values, said database organized as a multi-dimensional structure wherein one axis of said structure represents financial instruments, another axis of said structure represents scenarios and another axis of said structure represents time intervals. wherein the at least one first instrument risk value associated with the respective financial instrument, scenario, and time interval are stored in said structure" the immediate application's specification of pages 7 line 1 to page 8 line 31, this is a prior art. Particularly, in page 8 lines 2-14, these multiple axis are defined as portfolio "P" (instrument "I"), risk "V", scenario "s" and time "T". further, the above quoted limitations are disclosed by Ohata [[Abs; C1 L5 to C4 L37; C9 L1-L67; C12 L45 to C13 L5] to manage multi-dimensional data.

However, Moore discloses *applying* said selected set of scenarios to said set of financial instruments to produce a risk value for each financial instrument in said set of financial instruments for each scenario in said set of scenarios for each time interval, storing in a database each financial instrument risk value produced for each financial instrument in said set, and for a portfolio of financial instruments comprising at least a subset of said set of financial instruments, producing a desired risk metric from said associated probabilities and said determined risk values for each financial

instrument of said portfolio by retrieving said stored risk values from said database, and step of storing said produced risk metrics in said database and step of determining a credit exposure risk for at least one first party who is counter party for at least one of said financial instruments in said set of financial instruments, determining a subset of said set of financial instruments for which said first party is the counter party and determining the credit exposure for said first party by retrieving said stored values and said associated probabilities from said database and risk engine (GRMS – Global Risk Management system) [Abs; figures 1-7; C1 L8 to C2 L49; C3 L8-L27; C3 L48-L63; C4 L19-L36; C14 L7-L12; C30 L25 to C31 L47].

Further, Tull, Jr. discloses - storing instrument risk values produced at step (iii) in a database, a database to store each said determined instrument risk value and storing in a database each instrument risk value produced at step (ii); [(1-v)(24-iv)(20-c) for a portfolio of instruments comprising at least a subset of said set of financial instruments, producing a desired risk metric, producing a first measure of said at least one risk metric, wherein said producing step is performed by at least one aggregation engine (mathematical programming) adapted to retrieve for each financial instrument in said portfolio, stored instrument risk values for each scenario in said set of scenarios for each time interval from said database; sum said retrieved instrument risk values at each scenario at each time interval to produce aggregated risk values for said portfolio; and compute said desired risk metric using said aggregated risk values for said portfolio [Abstract; figures 1, 7; C3 L18 to C4 L63; C7 L1 to C9 L67; C13 L27 to C65; C19 L19 to C27]. It would have been obvious to one of ordinary skill in the art at the time the

Applicant's invention was made to modify the teaching of Dembo and include a system and applications of produce set of risk values, store the values in database and retrieve the values from database to reuse, as taught by Moore, Tull, Jr. and Ohata, to tabulate the risk values calculated for different set of parameters for distribution and future use and to provide data processing means for determining a price for a basket of shares and fast processing of multiple dimension database.

Furthermore, it is well known of one of ordinary skill in the art of statistics and probability math that computing probabilities of events in finite sample is often greatly simplified by use of rules for permutations and combinations. Furthermore wherein said proposed transaction comprises **altering** the amount of at least one financial instrument in said set of financial instruments, wherein said proposed transaction comprises adding a financial instrument to said set of financial instruments, and wherein steps (v) and (vi) are performed for a second proposed transaction and said second measure of said at least one risk metric (table or spread sheet) is produced for each of said proposed transactions are business decisions and making a spread sheet (tables) with different evaluation (calculation, numbers, updates) are not an inventive idea and it is used in every business, engineering and industrial analysis to compare differences between different set of analysis with different criteria and assumption for the same problem. The examiner takes official notice that he has done many engineering analysis in area of instrumentation & control, failure mode analysis, risk assessment and procurement of equipment.

Re. Claim 2, Dembo does not disclose the step of defining whether each instrument risk value produced is stored in step (iv) as an individual instrument risk value or is aggregated with at least one other financial instrument value and stored as an aggregated value. However, Moore discloses defining rules, storing data separately, or aggregated [Abs; C1 L8 to C2 L50; C5 L48 to C6 L15; C17 L57-L62; C24 L37-L63; C30 L25-L67]. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to modify the teaching of Dembo and include define values as individual or aggregate, as taught by Moore, to tabulate appropriate values for situation and scenario.

Re. Claim 3, Dembo discloses where in step (v), said user first selects a subset of financial instruments of interest from said set of financial instruments and said desired risk metric is produced for said subset by retrieving determined risk values for each financial instrument in said subset from said database [Abs; C1 L6-L18; C2 L57 to C3 L55].

Re. claims 4-10 & 17, Dembo discloses (17) step of selecting a first subset of said set of financial instruments and determining a risk metric and selecting a second subset of said financial instruments wherein at least one financial instrument in said first subset is replaced with another financial instrument, and performing steps (iii) through (v) produce a new risk metric [C1 L4-L67; C2 L43 to C3 L12; C4 L50 to C5 L12; C8 L27-L37]. Dembo, explicitly, does not disclose:

(4) where risk factor values for each said risk factor are also stored in said database.

(5) wherein definitions of portfolios of financial instruments stored in said database are predefined,

(6) wherein said definitions of portfolios are stored in said database, and

(7) where steps (iii), a check is first performed to determine if corresponding risk values for an instrument are already present in said database and risk values are only produced for those not already present,

(8) wherein step (iii) and (v) are performed in parallel (processing modules) on subsets of said set of financial instruments,

(9) where step (v) is performed by at least two users (workstations), each of said at least two users producing a risk metric for a different selected subset of said set of financial instruments, and (10) where step (v) is performed in parallel by each of said at least two users.

However, Moore discloses such steps [C1 L8 to C2 L50; C13 L24-L60; C17 L45 to C18 L23]. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to modify the teaching of Dembo and include storing values, definitions in database and checking if the value already exists, as taught by Moore, to save time, a common practice in business, computer and engineering such as developing tables, checking ID and password, etc. In communication, control and business multiprocessing (multithreads) are commonly known and all of known operating systems support parallel processing, and it is well known that commonly used

NT platform is used by many users (workstations) and users (two, three, ...) can use the same software application at the same time (e.g. WORD).

Re. Claims 21-22, Dembo discloses a risk management system according to claim 20 wherein said risk engine further comprises a user interface to allow a user to define a portfolio of financial instruments for said aggregating engine to operate on, and wherein defined portfolios are stored in said database. [C8 L12-L25; C16 L27-L37].

Re. Claim 23 Dembo, explicitly, does not disclose least two risk engines, each of said at least two risk engines operating in parallel to produce instrument risk values for a subset of said set of financial instruments. However, Moore discloses such steps [C15 L53-59]. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to modify the teaching of Dembo and include several risk engines (GRMS) operating in parallel, as taught by Moore, to add redundancy in case one system fails the user switch to next system. It is well known that most of DB systems are redundant and synchronized in recover data in case one of the database engines fails.

Re. Claims 12-14 Ohata further discloses wherein data is read from and written to said database in multi-dimensional groupings, wherein said grouping includes a selected amount of adjacent data from each of said axes of said structure, wherein said selected amount of adjacent data on a first axis differs from said selected amount of



data on a second axis, and wherein the total size of storage required for said multi-dimensional groupings does not exceed a preselected size [Abs; C1 L5 to C4 L37; C9 L1-L67; C12 L45 to C13 L5]. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to modify the teaching of Dembo and include processing and storing multi-dimension data, as taught by Ohata, to pair the data and store them on a page for fast retrieval.

### ***Response to Arguments***

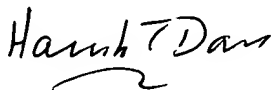
5. Applicant's arguments filed 7/15/2004 have been fully considered but they are not persuasive.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harish T Dass whose telephone number is 703-305-4694. The examiner can normally be reached on 8:00 AM to 4:50 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S Sough can be reached on 703-308-0505. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harish T Dass  
Examiner  
Art Unit 3628

A handwritten signature in black ink that reads "Harish T Dass". The signature is written in a cursive style with a large, stylized "H" and a long, sweeping underline.

11/14/04